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Bastion architecture of historic Moldova (the end of the 17th century – the middle of the 19th century)

Annotation. The article is dedicated to bastion architecture of Moldovan Principality. Bastion fortresses of historic Moldova completed in the end of the 17th century – the middle of the 19th century the Poland Kingdom, Ottoman Empire and Russian Empire defensive systems. They present a much more good engineer solutions then those proposed by medieval stone fortifications. They often surround the old Moldovan fortifications, performing the function of arsenal and base for attach during numerous military conflicts. The bastion system reflected the features of such schools as the French, the old Prussian, the Austrian, the old Polish, the Russian and other.

Keywords: bastion fortress, bastion architecture, Suceava bastion fortress, Hotin bastion fortress, Bender bastion fortress, Chişinău bastion fortress, Akkerman bastion fortress, Palanca bastion fortress, Soroca bastion fortress, Tiraspol bastion fortress.

The goal of this work is to display an overall picture of the bastion building with reference to a particular historical context, to identify planning and three-dimensional features of Moldovan bastion structures, to determine their classification features and typological characteristics.

The geographical boundaries of the study encompass the territory of the medieval Moldova to the first «amputations», which were made by the Ottoman Empire, as well as the territory of the present-day Transnistria (Republic of Moldova, the eastern part of Romania and the southwestern territories of Ukraine). The chronological framework covers the period from the end of the 17th century (the time of the first bastion structures in the Moldovan principality) to the middle of the 19th century (reaching the time of the decline of this kind of strongholds being ineffective from a military perspective).

In the 16th–17th centuries, bastion fortresses, which appeared as the result of the military equipment evolution, replaced medieval castles, equipped with massive walls and crenellated towers. The need to lower the high towers – the ideal target for enemy artillery – led to the appearance of bastions, much more efficient and cost-effective defense elements, which were spread rapidly throughout Europe. As a result, the obtained engineering solutions led to the elimination of the «dead

corners» and a higher resistance to enemy artillery fire. Military specifications of the bastion system adapted to the requirements of siege equipment were improved during the 16th–18th centuries, the time when other models and methods were introduced into practice. One can observe a number of European fortification schools at this time. The bastion system reflected the features of such schools as the French, the old Prussian, the Austrian, the old Polish, and the Russian one; in the tenaille system, the features of the old Prussian, the Austrian, the Russian and other schools can be noted; in the polygonal system, one can notice the traits of the old Polish school, the new Prussian school, the Austrian and the Russian schools and some other schools. From the middle to the end of the 19th century, the defense system based on separate or groups of forts was implemented (Austrian, Prussian, Russian, German, Polish and other schools).

On the territory of modern Romania, there were many bastion strongholds. In Transylvania, the well-known fortresses are Gherla, Tăuți, Oradea, Satu Mare, Alba Iulia, Sibiu, Mediaș, Sighișoara, Timișoara, Deva, Arad, and others. Italian, Turkish and Austrian architects were involved in the construction of Transylvanian bastion structures. Wallachia and Dobruja enjoy the presence of such fortresses as Giurgiu, Hârsova, Măcin, Isaccea, Tulcea and Brăila. The bastion lines defended such monastic ensembles as Strehaiia, Craiova, Râmnicu Vâlcea, Cozia, Banea and others. The bastion fortresses of Wallachia and Dobruja were erected by Turkish, Austrian and Russian fortifiers.

In Moldova, the most significant bastion fortifications appeared on the bank of the Dniester and Danube rivers. They functioned within the period of the end of the 17th century and the middle of the 19th century. Among the commissioners, there was a number of Poles, Turks and Russians, who often applied to the eminent European experts and used the local population as labor force. There are a few bastion structures built with the financial support of the Moldovan rulers.

Important fortification works in bastion style are initiated in Moldova in Suceava (partially preserved), Chișinău (now defunct), Roman (now defunct), Soroca (now defunct), Hotin (most of it being preserved), Bender (most of it being preserved), Palanca (now defunct), Akkerman (now defunct), Kilia (now defunct), Izmail (now defunct) and Reni fortress (now defunct). On the territory of the Republic of Moldova there was Tiraspol bastion fortress only some fragments of which have been preserved.

The earth fortress Zamca situated in western part of Suceava was erected [1] (fig. 1). That's one of the first bastion fortresses of

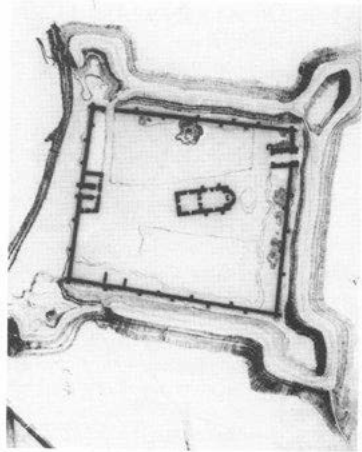


Fig. 1. Bastion fortress Zamca from Suceava (after G. Ionesco and R. Popa)

historical Moldova. That fortification was appeared in 1691 for the Anti-Ottoman campaign when John III Sobieski entered the Moldavian territory for the third time and disposed his headquarters in the Armenian monastery Zamca. It was not ruled out, that Poles resorted to the help of western engineers as good experts of military architecture of those times. New bastion fortress surrounded monastic complex and repeated trapezoid contour of stone wall. There were four bastions «pikes» in all corners of fortification with the guns inside of them. This type of fortification was used in Europe from 17th to the beginning of 18th centuries. Some remains of Zamca bastion fortress erected by Poles were kept till nowadays.

Probably that the bastion fortress of Soroca was built in Moldavia in 1691 around the old stone fortress, by order of the king John III Sobieski. That year English specialist Archibald Andrzej Glower de Glayden (de Glaydeny) invited by the Polish monarch arrived to Soroca [2]. It looks like that it was the engineer who became as author of the first bastion fortress named by New Earth work according to some documents of that time. It may well be so, French mercenary Dupont which accompanied the king John III Sobieski's many military campaigns took part in those construction works. In Russian State Military-Historical Archive of Moscow there are two plans of fortress of 1769 drawing by Russian engineers after occupation of Soroca during Russian-Turkish war in 1768–1774 [3] (fig. 2). General configuration of fortification consisting of tenailles and redans resembles irregular pentagonal star. The ditch repeats the contour of an earthwork. Another platform having a parallelogram form is attached to the north-east of the fortress. In the vicinity of tenailles the church of St. Archangels Michael and Gabriel is situated (nowadays inexistent). In intramuros there are five temporal dependences necessary for garrison. The principal acces to the bastion fortress is located near the redan. Two secondary accesses connect it with the St. Archangels Michael and Gabriel church yard and the artillery platform from the north-east. It seems that the bastion fortress is demolished at the end of the 19th century.

Bender bastion fortress appears in the first half of the 17th century. Just now the stone citadel gets a capping of walls and bastions of earth and ditches. A fortress reconstruction of big proportions takes place at the beginning of the XVIIIth century, when Bender becomes Silistra Beylerbey residence. In 1705 the sultan sent the big visir Iusuf pasha, Moldova and Muntenia princes, timariots and other functionaries from Rumelia to Bender under the pretext of Bender fortress reconstruction. In 1707 here comes Moldova prince Antioh Cantemir with his boyars and thousands of peasants in order to execute

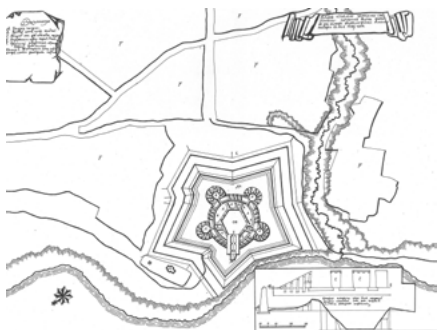


Fig. 2. Soroca bastion fortress, 1769
(after E. Wodzinski)

some construction works at the Ottoman porte command. The bastion fortress is reconstructed by French engineers according to the best French fortification school traditions (fig. 3). There is a bastion and tenaille system there which must protect the old stone construction. The new ditch is lined with stone and has scarp galleries with gun-ports and special opens for smoke evacuation. Counterscarp is also lined with stone. It is known that altogether eight bastions of pentagonal plan have been constructed in the upper part of the fortress and two in the lower part of it. At some bastions lined with granite stone appear. From here stone galleries with draw-wells lead to interior of the protected space. Bastion fortress ditch is dry. In intramuros there are mosques, bath-houses, deposits and other constructions, placed without any geometrical rigor. All of them have a typical aspect. Bender bastion fortress has six access gates: «Istanbul (Constantinopol, Tsarigrad) Gate», «Orhei (Horde) Gate», «Varnitsa Gate», «Camenitsa Gate», «Gate from the water» («Gate from the sea») and «Tabac Gate». From the low fortress you can get the bank through «Small Gate from water». In the epoch documents «Iași Gate» and «Chișinău Gate» are also mentioned.

In 1793–1796 the fortification is amplified by French engineer François Kauffer [4]. On the fortress bastions some inscriptions and representations with indication of 1794 year are kept till nowadays. Now, in front of the bastions, a covered way with triangular places of arms and in the river part – a line with redans and an advanced redoubt for artillery appear. From water part the old stone citadel is protected by a redan. From 1806 Russian army troops are dislocated in the fortress.

Chișinău bastion fortress (the end of the 18th century) is one of the most modest among fortifications mentioned above [5] (fig. 4). Its topography provided a natural protection. It occupied an area of about 4,6 ha, being endowed with an earth wall, wide ditches and bastions of different sizes – platforms for guns. The fortress protected the bridge over Bc and could accommodate a garrison of over 1000 defender, supplemented in some



Fig. 3. Bender bastion fortress, 1770
(the Romanian Academy Library)

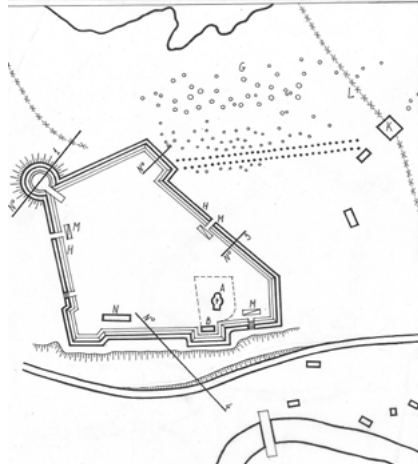


Fig. 4. Chișinău bastion fortress, 1789
(after V. Lupașcu)

cases, by volunteers from the city.

Palanca bastion fortress is built by the Ottoman Porte on place of Moldovan Iurghici and Ottoman Ian k-Hisar fortresses [6] (fig. 5). In accordance with the narration of Turkey passenger Evliya elebi, Ian k-Hisar stone fortification appears in 1617, being ordered by sultan and construction works are supervised by Ochakov governor Ibrahim pasha. In 1657 here exists a powerful tower of circular plan with a roof from thin boards, In the external part all around there is some kind of palanka, fortified and constructed from wood. Evliya elebi mentions the fortress dizdar (commander), 200 armed soldiers, a munitions deposit and 20 «king guns» [7]. In the fortress plan from 1789 there is a figure similar to a quadrangle with a surface of nearly 1 ha [8]. Fortress angles are amplified by two bastions, one demi-bastion and one stone cylindrical tower. It is advanced in the inside of the enclosure. Formerly here was posted a guard corps. The entrance to the fortress was effectuated from a fix wood bridge, constructed over a broad ditch, which protected the fortification from three parts. The south part was protected by the abrupt relief. In the interior space different auxiliary constructions are placed: the mosque, powder-magazine, soldier barracks and others.

The bastion fortress of Akkerman (Cetatea Alb , Belgorod, now Belgorod-Dnestrovsky, Ukraine) was built by the French engineer Fran ois Kauffer in the end of the 18th century. On the plan of Akkerman from 1793 [9] two versions of bastion fortress project are shown: the first presenting an enclosure with three bastions at corners and a covered way with places of arms, and the second – a covered way

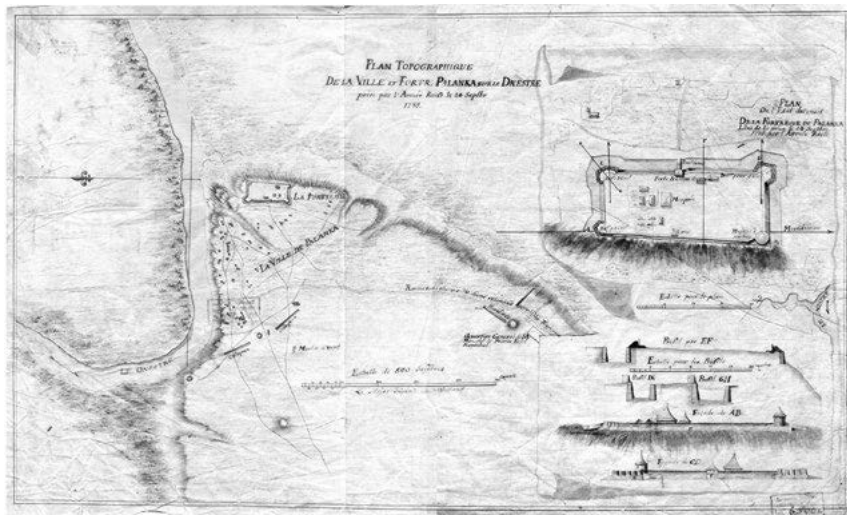


Fig. 5. Palanca bastion fortress, 1789 (after I. Karaszewicz)

with five triangular places of arms, all of them in right angle, forming a defensive line. The third variant of Kauffer [10] presents a star with 6 rays. The fourth variant involves the destruction of a stone fortress (fig. 6). From ulterior draughts, executed by Russian militaries, it can be seen that the second version was preferred. The project elaborated in 1807 by Russian engineer Egor Foerster [11] contained a proposal how to improve this fortress, providing it with a covered way and four triangle places of arms, from which two in right angle and two in acute angle. The glacis is defensively organized. In the interior

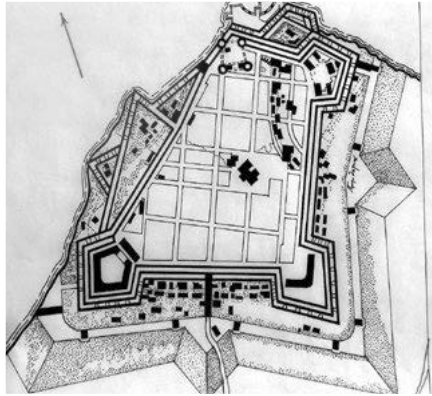


Fig. 6. Project of Akkerman bastion fortress realized by François Kauffer, 1793 (RMHAM)

space some dependences appear, being placed almost parallel and perpendicular to the north-south direction. The new fortification presents a line of tenailles entirely justified in this case: angles oriented out alternates with those oriented in, each side being at the same time flank and face. Such system allowed to burst a cross fire against enemy and did not permit to install breach artillery on the glacis bank.

In the 18th century Akkerman fortress with tenaille system were preferred especially by the representatives of German and French school. In this case both engineer Kauffer, employed by Ottoman, and engineer Foerster, who was serving Russians, continued the tradition of such type fortress. But just a little simplified Kauffer project was used to build the bastion fortification of Akkerman. It was an irregular plan, a side of the interior space being protected by the Dniester leman waters.

It seems that the first elements of the Kilia bastion fortress have appeared in the early of 18th century. It was there then while according to the order of Ottomans the French engineers could build the two earthen structures intended for heavy artillery named in the prospectus of Kilia for 1770 as «Bollwerk-s at the revetment walls» [12]. After 1794, under the orders of Selim III, a French engineer François Kauffer completely rebuilt the defense complex [13]. New bastion fortress, including a Moldavian stone fortress was a square plan and had a sloping glacis, three corner bastions in the form of pikes and one asymmetrical double corner bastion of polygonal plan. The intramuros was divided into a number of squares and rectangles and proportional conception of the fortress was stipulated by strict geometry of inner yard. The bastion complex of Kilia reminds us of the manners of strengthening of the famous French engineer Vauban such as open the bastions, built into the shaft of a barrack, a massive earthen breastworks and covered road with some traverses and bypasses in front. Bastion square has remained very widespread kind

of fortifying since the 16th century, only the form of bastions perfected with the lapse of time. At the beginning of the 19th century typical elements of the fortress were covered road of tenaille tracing and some bastions with artillery pieces of ordnance located throughout the length of the faces. After the 1812 restructuring of the bastion fortress of Kilia was engaged by Russian military engineers Ivan Hartingh, Egor Foerster (fig. 7) and others. This fortress was eliminated as a military object before the entry a town Kilia into Romanian state in 1856.

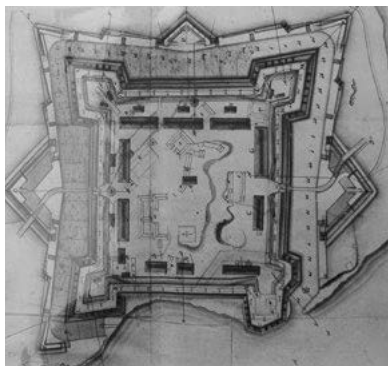


Fig. 7. Kilia bastion fortress realized by Egor Foerster, the beginning of the 19th century (RMHAM)

The Hotin protobastion fortification existed in 1673 already, when Polish army attacked Ottomans installed in the town and fortress. In the People Museum from Warsaw two engravings, representing the situation of the mentioned battle are kept. Both of them depict the protobastion fortress with walls and ditches [14]. On the first engraving an old fortress of stone, situated out of the fortified new area can also be seen. In the first plane, on the left bank of the Dniester, a little fortress of a rectangular plan is placed. The other engraving represents the earth fortress only. Here, principle defensive method is that with tenailles. On the opposite bank of the river an auxiliary bastion fortification is remarked.

In 1713 Hotin is subjected by the ottoman Porte, which creates a raya here. In order to defend the stone fortress from artillery, French engineers build at Ahmed III order the bastion fortification. Being constructed on an accidental relief, it surrounds the old stone fortress from three parts. In Turkish plan from 1713 the bastion fortress is shown [15]. In this graphic document we read with bastions-burçs and walls of earth, the covered way with places of arms, the «Bender Gate» and «Gate from water» («Camenitsa Gate») can be seen. But the «Iași Gate» is absent. The dimensions of the new fortress axes in the directions of cardinal points are 650 x 280 m. In the superior part of walls, which have a breadth of 6 m and a height of 10 m there are Walgangs. In some places traverses are installed. Some portions of the enclosure are supplementary fortified with palisades. Defensive ditch has a breadth of 24 m. In order to effectuate military operations, in the inside mine galleries are arranged under walls. A Hotin plan from 1739 demonstrated in details the bastion fortress. On its territory the commandant house, the mosque, soldier's barracks, workshops, stables, bath-houses, deposits and other building are situated. A Hotin plan realized by the Russian engineers represents the location and the bastion fortification. The last is divided in two by a ravine, on the bottom of which a small river runs. It has 5 bastions, a demi-bastion, a double bastion and three access towers: «Bender Gate» and «Gate from the water». On the Hotin perspective, dated also 1769, the min-

arets of those two mosques, commandant house, engineers house, arsenal, bath-houses and other buildings can be seen. It can be seen also the gabions. On the plan from beginning of 19th century, «Ia i Gate» is called «Janissary Gate» and beginning with 1813 it appears in documents as «Izmail Gate». It is known that Ottomans undertake here construction works in 1775–1779 (Ottoman architect Mehmed Tahir Aga and other) and in 1793–1794 (French engineer Kauffer). After 1812 the Hotin bastion fortress is repaired and amplified by Russian military specialists (fig. 8).



Fig. 8. Hotin bastion fortress, the 19th century (the Russian State Library)

The Middle Fortress of Tiraspol (the end of the 18th century) is protected by two bastioned lines [16] (fig. 9). The fortress have 8 bastions, 2 demi-bastions (one without the right flank, and the other without the left flank), two access gates and a redan in the south-west corner of the defensive objective. The vast majority of bastions have male names: Vladimir, Paul, Peter, George and Nicholas, but there is a bastion named Slava (Glory) and another one called Pobedonosets (Trophy-Bearer). Demi-bastions also have male names: Alexander and Joann. On the contrary, places of arms, which occupy a more advanced position toward the battlefield, are dedicated to women: Elena, Olga, Maria, Ekaterina and Alexandra. Bastion from the north-west is amplified from the extramuros by a conteguard in sharp angle placed strictly symmetrical to the capital line. Most of the bastions have two faces, two flanks and an open gorge. Some contain, inside, certain auxiliary constructions. The whole defensive objective is subjected to French engineer Vauban principle, as confirmed by the traverses with passages from the front. Three sides of the fortification are surrounded by a defensive ditch. The central place within the fortress is occupied by the garrison church.

The classifications of bastion fortresses are based on the endurance and durability (long-term and field fort), defense purposes (military strongholds, fortified residences and fortified settlements),

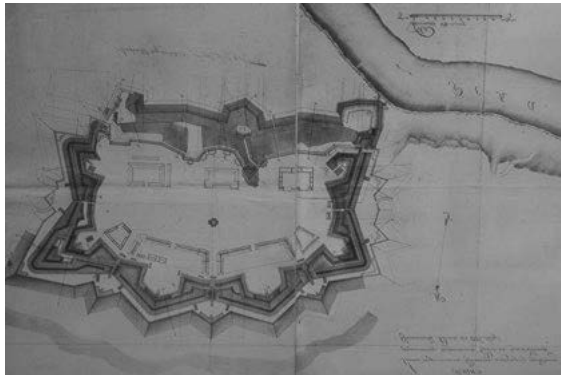


Fig. 9. Tiraspol bastion fortress, the end of the 18th century (after E. Smolin)

flanking (bastion front, tenaille front, polygonal front and fort defense), the construction site (built on low land and hills, near-border and domestic territories), the construction material (stone, earth), the form of the plan (regular shape fortresses: square, rectangular, trapezium, polygonal or star-shaped and the ones of irregular shape), the school of engineers and architects (the fortresses of the French, Dutch, Prussian, Austrian, Russian, Turkish and other schools), customers (Polish, Turkish and Russian). Based on the location of the constituent elements of Moldovan bastion strongholds in relation to the defending space, they are divided into external and internal structures. The external elements are bastions, demi-bastion, curtain walls, breastworks, parapets, entrance gates, posterns, ditches, bridges, palisades, covered ways, lodgements, glacis, ravelins, caponiers, semi-caponiers, hornworks, crownworks, tenailles, cavaliers, barbettes, reduits, flèches, lunettes, redoubts, batteries, bridgeheads, retrenchments, forts and others. The internal components include various inner buildings meant for the normal functioning of the fortresses. This category includes palaces and military leaders' houses, religious buildings (churches and mosques), built-in or freestanding baths, gunpowder deposits, weapons and provisions storehouses, barracks for officers and soldiers, stables, workrooms, prisons, shelters and other structures.

The military achievements of the Ottoman Empire were closely related to the Janissary units that, for a long period, determined the success of the aggressive policy of the Porte. In Moldova, which had a special autonomy with the status of the country protected by the Porte and located in the «House of Peace», the Janissary units were stationed on the Dniester and Danube rivers: in Hotin, Bender, Kilia, Akkerman, Reni and Izmail fortresses. The Turks erected their mosques here, often placing them on the site of the destroyed Orthodox churches. Sometimes they altered the old churches by attaching minarets to them.

There were also built dizdars' and pashas' palaces, baths, barracks, etc. During the Ottoman period, some Moldovan fortresses were decorated with some original images: petroglyphs, graffiti, relief compositions, etc. However, most of the signs were attributed to the emblems of the Janissary units. They were used on the flags, military tents, at the entrance to the barracks, tattoos, and others. Thus during the 18th century in Bender fortress, one can observe the appearance of Janissary symbols in the form of vases with flowers or fruit, mosques, trees, guns, a stylized bow and arrow, a ship, an anchor, the sun, the moon, a labyrinth, «Star of David», an eagle, a dragon, a weasel, a horse, etc. Akkerman fortress still enjoys the presence of the three cannonballs original compositions arranged horizontally and embedded in the masonry. Another Janissaries' emblem can be «Tetraktys Pyramid», which the Turks paved using cannonballs in the newly built bastion on the shore at the end of the 18th century. In Hotin fortress, one could see a picture of an elephant with a palanquin, «the sword of Ali», the tent with an arrow, a hookah, a wheel, a rosace, a comb, a minaret, an anchor, a tiger on a chain next to a palm branch, a tiger on a chain next to the military, flags on flagpoles, guns, the heart, a bow and an arrow, a variety of geometric shapes, letters and others. In Izmail fortress there

were petroglyphs depicting «the sword of Ali», «the hand of Fatima», a dervish, an arrow and a bow, snake-shaped tamgas, the Kaya tribe tamgas and others. In special cases, slabs with the seals of the Turkish sultans who funded the castle construction were built in.

Poles, Turks and Russians employed many well-known experts of Western Europe, where the art of defense was at a very high level. The French, the British, the Swiss, the Dutch, the Germans, the Poles, the Austrians, the Russians and the Turkish were part of the military engineering corps of the Polish Kingdom, the Ottoman Empire and the Russian Empire. Being in the service of the Poles, Glower de Glaydeny from England and Ludwig Nikolaus von Hallart from Switzerland took part in the construction of the bastion fortifications of the city of Soroca.

Such engineers and architects as François Kauffer from France, Selim Efendi from England, Josef Felix Lazowski from Poland, Mehmed Tahir Aga, Ebu Bekir Aga and Mehmed Ra id from Ottoman Empire were in the service of Turkish sultans. Kauffer rebuilt the fortresses of Akkerman, Kilia, Izmail and Hotin; Selim Efendi strengthened the defense system of Izmail fortress, Lazowski modernized Hotin fortress, and Mehmed Tahir Aga did some construction work in the fortresses of Akkerman, Bender and Hotin. Moldovan defensive structures were repaired and rebuilt by such Turkish specialists as Hafiz Ibrahim, Ahmed Khalif, Haji Musa, Abdulkерim Efendi, Seyid Mustafa Khalif, Seyid mer and others. Daniel de Bosquet from France, Hilarion Golenishtchev-Kutuzov from Russia, Fyodor Feraye, François de Wollant and Ivan Hartingh from the Netherlands, Egor Foerster, Carl Opperman and Eduard Totleben from Germany, August von Kahlenberg from Austria, Christopher von der Hoven from Latvia, Alexei Martos from Ukraine and many others were in the service of Russian monarchs. Golenishtchev-Kutuzov built Roman bastion fortress on the territory of Moldova beyond the Prut river, De Wollant fortified the outwestern regions of the Russian Empire and the Crimea, Hartingh and Foerster reconstructed Kilia, Bender and Akkerman bastion fortresses, where as Totleben improved Bender fortress.

The architectural replanning, restoration or reconstruction of the bastion fortresses of Moldova and Transnistria were carried out by experts employed by the tsar. They were as follows: Andrey Litov, Mikhail Mordvinov, Kirilo Neverov, Dmitriy Rozov, Grigoriy Chernyshov, Andrey fon der Planitz and others. At the end of the 18th century and the 19th century, the main body of Russian military cartographers who worked in Bessarabia or Moldovan territory beyond the Prut river was comprised of Eberhard Ditmars, Grigory Manikin-Neustroev, Pavel Tuchkov, Martin Hartingh, Paul Skugarevsky, Carl von Ruge and others.

All the engineers and architects involved in the construction of the bastion fortresses of Moldova used the local population as the labor force. In many cases, Moldovan rulers also participated in financing the construction of these bastions.

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Бастионная архитектура исторической Молдовы (конец XVII – середина XIX вв.)

Мариана Шлапак

Аннотация. Статья посвящена бастионной архитектуре Молдавского княжества. Бастионные крепости исторической Молдовы дополнили в конце XVII – середине XIX вв. оборонительные системы Польского королевства, Османской и Российской империй. В них применены гораздо более совершенные инженерные решения, чем в средневековых каменных крепостях. Построенные вокруг старых молдавских твердынь, они выполняют функцию арсеналов и баз для атаки во время многочисленных военных конфликтов. Бастионная система включает особенности французской, старой прусской, австрийской, старой польской и других школ.

Ключевые слова: бастионная крепость, бастионная архитектура, Сучавская бастионная крепость, Хотинская бастионная крепость, Бендерская бастионная крепость, Кишиневская бастионная крепость, Аккерманская бастионная крепость, бастионная крепость Паланка, Сорокская бастионная крепость, Тираспольская бастионная крепость.

**Бастіонна архітектура історичної Молдови
(кінець XVII – середина XIX ст.)**

Маріана Шлапак

Анотація. Статтю присвячено бастіонній архітектурі Молдавського князівства. Бастіонні фортеці історичної Молдови доповнили наприкінці XVII – середині XIX ст. оборонні системи Польського королівства, Османської та Російської імперій. В них застосовано набагато досконаліші інженерні рішення, ніж у середньовічних кам'яних фортецях. Побудовані навколо старих молдавських фортець, вони виконують функцію арсеналів і баз для атаки під час численних військових конфліктів. Бастіонна система включає особливості французької, старої пруської, австрійської, старої польської та інших шкіл.

Ключові слова: бастіонна фортеця, бастіонна архітектура, Сучавська бастіонна фортеця, Хотинська бастіонна фортеця, Бендерська бастіонна фортеця, Кишинівська бастіонна фортеця, Аккерманська бастіонна фортеця, бастіонна фортеця Паланка, Сорокська бастіонна фортеця, Тираспольська бастіонна фортеця.